

REMARKS

Reconsideration of this application, based on this amendment and these following remarks, is respectfully requested.

Claims 40, 41, and 53 through 55 remain in this case. Claim 53 is amended. Claims 40 and 41 stand allowed.

The specification is amended to properly recite the related applications through which this application claims priority, as specified in the Application Data Sheet submitted with this paper.

Claims 53 through 55 were newly rejected under §103 as unpatentable over the Sperlich reference¹ in view of the Hunt et al. reference.² The Examiner asserted that the Sperlich reference teaches all of the requirements of claim 53 except for the data transmission being in the form of a frame based discrete multi-tone modulation scheme and a multiplicity of subchannels. The Examiner found, however, that the discrete multi-tone modulation was taught by Hunt et al., and would have been easily adopted by the skilled artisan into the Sperlich system to further improve system reliability and efficiency; the claim was so rejected. The additional limitations of dependent claims 54 and 55 were found by the Examiner to be taught by the Sperlich reference, or obvious to the skilled artisan, and these claims were also rejected under §103.

To advance the prosecution of this case, claim 53 is amended to overcome the rejection. Amended claim 53 now recites that transmitting step a) transmits a first number of frames comprised of at least one frame of downstream data, during which downstream transmission period no upstream data transmissions are permitted, and that transmitting step b) transmits a second number of frames comprised of at least one frame of upstream data, during which upstream transmission period no downstream data transmissions are permitted. Claim 53 now further recites the steps of altering the first and second numbers of frames to vary an asymmetry

¹ U.S. Patent No. 4,644,534, issued February 17, 1987 to Sperlich.

² U.S. Patent No. 5,400,322, issued March 21, 1995 to Hunt et al., based on an application filed August 20, 1993.

ratio of the downstream and upstream data transmission periods, and of then repeating the sequential transmitting steps a) and b). The specification of this application clearly supports this amendment to claim 53,³ and as such no new matter is presented.

The method of amended claim 53 provides important advantages over conventional systems and methods, specifically by providing the ability to dynamically allocate bandwidth between the upstream and downstream communications.⁴ Such dynamic allocation is contemplated to be especially useful in systems having a point to multipoint architecture, considering the wide asymmetry in data capacity demand that may be encountered in such systems. In addition, the time-domain multiple access utilized by the method of claim 53 provides this capability, including the ability to dynamically optimize the asymmetric data capacity, in a manner that enables low cost hardware implementations.⁵

Applicants submit that amended claim 53 and its dependent claims are patentably distinct over the applied references.

The Sperlich reference nowhere discloses the steps of altering the first and second numbers of frames, much less then sequentially repeating the transmitting steps, as now required by amended claim 53. Nowhere does the reference anywhere disclose or suggest varying an asymmetry ratio between the duration t_S of its downstream transmission period Z-S and the duration t_E of its upstream transmission period Z-E.⁶ To the extent that the Sperlich reference varies the burst lengths of downstream data transmitted within the downstream period Z-S, it is expressly stated that these burst lengths are held within the limit given by the duration t_S .⁷ Nowhere does the reference disclose varying the duration t_S itself, much less varying this duration to vary an asymmetry ratio between the upstream and downstream transmission periods,

³ See specification of S.N. 10/052,964 as published as United States Patent Publication No. US 2002/0122437 A1, paragraph [0119].

⁴ *Id.*

⁵ Specification, *supra*, paragraph [0118].

⁶ Sperlich, *supra*, column 2, lines 46 through 52; Figure 3.

⁷ Sperlich, *supra*, column 5, lines 10 through 22.

as recited in amended claim 53. Applicant therefore respectfully submits that the teachings of the Sperlich reference fall short of the requirements of amended claim 53.

The Hunt et al. reference also provides no teachings in this regard. As such, Applicants submit that the combined teachings of the references fall short of the requirements of amended claim 53 and its dependent claims.

Applicants further submit that there is no suggestion from these references, or from the prior art, to modify these teachings in such a manner as to reach the requirements of amended claim 53. This lack of suggestion is especially evident from the Sperlich reference, which does not contemplate the dynamic allocation of the data rates and capacities between the upstream and downstream directions, but rather treats the two transmission periods as fixed. Applicants further submit that the important advantages of enabling dynamic allocation of upstream versus downstream data capacity, as provided by the method of claim 53, stems directly from the difference between the claim and the prior art, further supporting the patentability of these claims.

For these reasons, Applicants submit that amended claim 53 and its dependent claims are patentably distinct over the applied references.

The prior art cited as pertinent but not applied has been considered, but is not felt to come within the scope of the claims now in this case.

Applicants submit an additional Declaration, and Application Data Sheet, for this application. A question was raised, in one of the companion divisional applications⁸ to this application, regarding the claim of priority as specified in the original Declaration. This Declaration and Application Data Sheet is intended to avoid any such question in this case.

Acceptance of this Declaration is requested.

⁸ Application S.N. 10/052,194.

For these reasons, Applicants submit that all claims in this case are in condition for allowance. Reconsideration of this application is therefore respectfully requested.

Respectfully submitted,



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